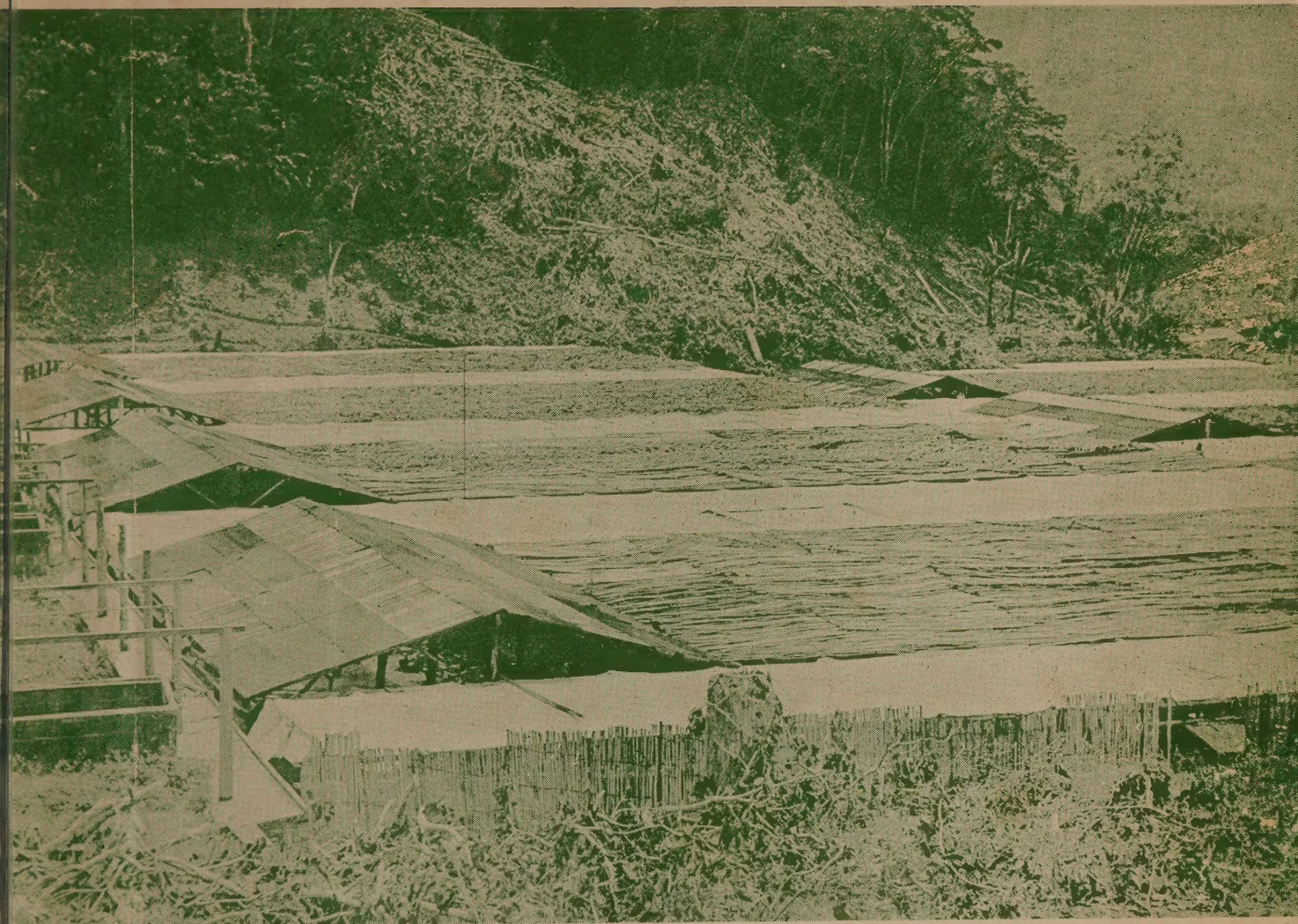


COLONY OF TRINIDAD AND TOBAGO



ANNUAL REPORT

FOR THE YEAR 1948



DEPARTMENT OF AGRICULTURE

COVER ILLUSTRATION : Cocoa Propagating Station, La Pastora
Photo : B. G. Montserin

TRINIDAD AND TOBAGO



ADMINISTRATION REPORT

of the

DIRECTOR OF AGRICULTURE

for the year

1948

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INTRODUCTION

THE year under review was marked by increased production in the principal crops of the Colony. High market prices for cocoa and favourable weather conditions resulted in one of the best crops for many years. The crop from many of the formerly abandoned cocoa plantations was salvaged and on other estates, the normal cultural operations were made possible due to prevailing market prices. The Sugar Cane crop was good and, excepting for labour disturbances during the reaping season, production would have shown a bigger increase over that of last year than was actually the case. Coconuts made considerable recovery from the previous year's drought and grapefruit and oranges produced a record crop due to regular fruit setting during 1947 as well as to the coming into bearing of new cultivations.

AGRICULTURAL POLICY

The aims and ideals towards which agricultural effort should be directed are given in detail in the report of the Agricultural Policy Committee which, having been accepted by Government, is being implemented as circumstances permit. The shortage of trained staff and of funds continue to be the chief obstacles. However, preliminary work continues on the establishment of the Central Experiment Station and it is hoped that funds will be available at an early date for implementation of the composite scheme.

2. Progress has been made in the establishment of Demonstration Stations in outlying districts such as Rio Claro, Sangre Grande and Penal. These Stations, besides forming part of an educational programme, also return valuable data with respect to the behaviour of crops under conditions peculiar to the several districts. Being provided with livestock, they also illustrate the interdependence of animal and crop husbandry.

3. A summary of the main lines upon which agricultural policy continues to be directed is reproduced from previous reports and is as follows:—

- (i) To prevent the exploitation of the soil and to endeavour to improve its productivity under agricultural management.
- (ii) To encourage the production of local food crops bearing in mind the importance of nutritionally desirable foods both for man and livestock, to supply improved planting materials and to advise upon methods of production.
- (iii) To encourage the maintenance of livestock in increased numbers and of improved productive capacity in the interests of the improved nutrition of the people and of soil fertility and to conduct investigations towards these ends.
- (iv) To aid the established sugar cane, coconut, cocoa and citrus industries by assistance in the supply of improved planting material and of technical advice based on the results of field experiments.
- (v) To prosecute investigations designed to expand the range and improve the quality of economic crops both for export and local consumption by field trials of indigenous and imported species.
- (vi) To encourage a healthy outlook on agriculture as a mode of life by the expansion of vocational education in agriculture and the creation of an informed extension service. To facilitate settlement on the land under secure tenure.
- (vii) To stimulate co-operation amongst agriculturists with the object of co-operative marketing and to provide a channel for the granting of financial assistance to productive enterprises.

SECTION I

AGRICULTURE IN THE COLONY IN 1948

GENERAL CONDITION

Weather conditions were normal for the first half of the year, but the rainy season was unduly heavy and resulted in flooding in many areas with consequent loss of food crops. Heavy and, in some districts, continuous rains had a disastrous effect on the setting of citrus with the result that an extremely poor crop is anticipated in 1949. Cocoa also, in the wetter districts, appears to have been adversely affected by the weather.

2. The rainfall for representative localities throughout the Colony was as follows :—

				1948	Average 1937-47
Port-of-Spain	...	...	...	73.32 inches	63.47 inches
St. Joseph	...	...	...	64.32 "	64.74 "
Diego Martin	...	...	...	88.96 "	70.23 "
Carapichaima	...	...	...	82.95 "	60.21 "
Couva	...	...	...	63.19 "	71.38 "
Naparima	...	...	...	72.74 "	66.63 "
Cedros	...	...	...	56.92 "	57.84 "
Toco	...	...	...	74.68 "	79.22 "
Rio Claro	...	...	...	85.17 "	97.36 "
Tobago	...	...	...	58.77 "	76.58 "
Average				72.10 "	70.74 "

3. *Labour*.—The supply of agricultural labour was adequate generally except for temporary shortages in certain coastal areas during the fishing season. Labour disturbances involving strikes and acts of sabotage on certain sugar estates interfered with the harvesting of canes.

AGRICULTURAL PRODUCTS FOR HOME CONSUMPTION

Food Production

4. Much emphasis has been placed on the production of crops for export but equal attention is being given to the production of food crops for consumption locally. A welcome trend has been the increasing tendency to turn from starchy vegetables to greens and the choicer vegetables and in some cases there have been small exportable surpluses of the latter. On the whole markets were adequately supplied excepting for the normal seasonal shortage usually experienced in August and September of each year.

5. *Ground Provisions*.—The supply of ground provisions was good during the year. The yam crop was heavy and the price was lower than usual. Dasheens and cassava were notably plentiful and in the case of the latter there were localised gluts and in many instances surpluses were used to feed stock. With the need for establishing ground shade in connection with Cocoa Rehabilitation and with the increasing number of planters participating in the Scheme, it is anticipated that appreciable increases in bulky foods will become available.

6. *Grain Crops*.—Both the main and secondary crops of maize were very poor and a shortage may be expected during 1949.

7. The rice crop was good, despite a set back in some areas due to heavy floods at planting time. Hill rice continues to be more widely planted and yields are good. The planting of swamp rice is also being extended and, where possible, ratoon crops are harvested to meet the general shortage in this commodity.

8. *Vegetables*.—The production of vegetables continues to increase and localised gluts of cabbages and tomatoes occurred at periods of peak production. During the first quarter of the year, some 50,000 lb. of perishable fresh vegetables were exported to British Guiana and other South American countries. Extension of vegetable growing within recent times has been spectacular and indeed gratifying.

9. *Other Crops*.—Pulses, notably pigeon peas, were scarce although a few markets were glutted for short periods during the early months of the year.

There has been some improvement in the quantity of bananas reaching the various markets. Plantains were in short supply.

Livestock

10. *Diseases*.—There were no outbreaks of proclaimed diseases during the year. Six suspected cases of paralytic rabies and one suspected case of anthrax were reported but, on investigation, they proved to be negative.

11. Tuberculin testing of cattle is now carried out with the tuberculin-purified protein derivative obtained from the Ministry of Agriculture and Fisheries in the United Kingdom. Of 1,228 head of cattle tested during the year, 75 reacted resulting in an incidence of some 6 per cent. Reactors were slaughtered and Government paid partial compensation.

12. Some opposition was encountered in testing dairy cattle belonging to the peasantry in the rural areas and to overcome this, resort had to be made to prosecuting the owners concerned for obstructing the Veterinary Officer in carrying out this public health measure. The offending owners were convicted and fines imposed.

13. *Livestock Improvement*.—Breeding units for the improvement of livestock were maintained throughout the Colony and, on the recommendation of Government's Economic Crisis Committee, service fees were reduced to their former cheap level as from 1st January, 1948.

14. During the year, Caroni Ltd. imported from the United Kingdom a pure-bred Holstein Friesian bull and two pure-bred heifers in calf. The two heifers have both calved-down bull calves. The Department of Agriculture placed orders for five Murrah Water Buffalo bulls and three selected Sahiwal bulls and a cow in calf from the Pusa Herd, through the Government of India. The Sahiwals are required for the improvement of the milking qualities of the herd now stationed at the Government Farm, Tobago and the buffaloes were ordered on behalf of local Sugar Companies.

15. *Importation of Animals*.—The following animals were imported into the Colony during the year and were inspected by Government Veterinary Officers :—

Animals for Food

Type	Source				Number	Total
Cattle	...British West Indies	...	...	...	4	
	Colombia	...	...	...	415	
	Santo Domingo	...	...	...	439	858
Goats	...British West Indies	...	...	...	6,927	
	Venezuela	...	...	...	352	7,279
Sheep	...British West Indies	...	...	...	2,530	
	Venezuela	...	...	...	2	2,532
Swine	...British West Indies	...	...	...	4,419	4,419

Animals for Breeding and Work

Type	Source	Number	Total
Cattle	...United Kingdom	3	3
Mules	...British West Indies	20	
	French West Indies	54	
	United States of America	68	142
Asses	...British West Indies	58	58
Horses	...United Kingdom	10	
	British West Indies	28	
	French West Indies	2	40
Goats	...British West Indies	24	
	Netherlands	1	25
Sheep	...British West Indies	4	4

16. In addition, 86 dogs were imported during the year, of which 35 came from the United Kingdom, 10 from Canada, and 31 from the United States of America.

17. Frozen meat from Australia has become the chief source of the meat supply in the Colony and only 858 live cattle were imported for slaughter during the year, as compared with 16,547 head in 1945, 5,526 in 1946 and 3,539 in 1947. These cattle were imported chiefly from Santo Domingo (439) and Colombia (415).

18. *Livestock Shows.*—The following Livestock Shows were held during the year :—

- (a) The Poultry Association's Third annual show during the first quarter of the year, in Port-of-Spain (Princes Building).
- (b) The Trinidad Goat Society's Seventh annual Goat Show on the Queen's Park Savannah in May.
- (c) Seven Cane Farmers and Peasant Shows extending from Tacarigua in the North to Debe in the South during the months of September and October.

Livestock also formed an important section of the Tobago Agricultural and Industrial Exhibition in December in the Island Ward. The livestock exhibited at all these shows were of a high standard and were a credit to Government's breeding policy.

19. A health week exhibition organised by the Trinidad Branch of the British Medical Association was held at Port-of-Spain during the first quarter of the year and the Government Farm exhibited a clean milk stall in which the handling, cooling and bottling of milk was demonstrated.

AGRICULTURAL EXPORTS IN 1948

20. The total value of Agricultural Exports shows an appreciable increase over the previous three years as the following figures indicate :—

1948	...	...	\$26,806,254
1947	...	...	16,872,844
1946	...	...	12,351,877
1945	...	...	9,876,651

The increase of \$9,933,410 over the 1947 figures is made up chiefly of substantial gains in respect of exports of sugar and by-products (\$5,438,241), cocoa (\$5,150,006) and citrus (\$1,111,826). On the other hand there were substantial decreases in the value of exports of coconut products, coffee, rubber and tonca beans.

21. Sugar and rum alone account for \$15,395,575, cocoa for \$8,356,448 and citrus for \$2,170,150 in the year's total of \$26,806,254.

22. The detailed exports for the year 1948 are as follows :—

<i>Sugar and Bye-Products</i>				<i>Quantity</i>	<i>Value</i>	<i>Value</i>
					\$	\$
Sugar	...	...	...ton	95,145	12,273,074	
Molasses	...	...	...gals.	—	—	
Rum	...	...	...proof gals.	1,100,014	3,122,501	15,395,575
<i>Cocoa</i>						
Raw Cocoa	...	...	...lb.	18,285,605	8,353,312	8,356,448
Cocoa Butter	...	...	...lb.	3,518	2,399	
Prepared Cocoa	...	...	...lb.	1,194	737	
<i>Citrus</i>						
Lime Oil—Distilled	...	...	...lb.	31,460	151,011	
Lime Oil—Hand pressed	...	...	...lb.	136	1,268	
Raw Lime Juice	...	...	...gals.	82,616	48,445	
Limes Fresh	...	...	...lb.	14,750	1,592	
Citrate of Lime	...	...	...lb.	26,488	2,128	
Fresh Grapefruit	...	...	...no.	21,540,031	930,550	
Fresh Oranges	...	...	...no.	4,963,413	287,724	
Canned Grapefruit Juice	...	...	...gals.	647,983	747,432	2,170,150
<i>Tonca Beans</i>	...	...	...lb.	105,959	93,335	93,335
<i>Rubber Raw</i>	...	...	...lb.	7,728	2,318	2,318
<i>Coffee</i>						
Raw Coffee	...	...	...lb.	1,450	528	
Prepared Coffee	...	...	...lb.	45,236	21,126	21,654
<i>Coconuts and Coconut Products</i>						
Copra	...	...	...lb.	—	—	
Edible Oil	...	...	...gals.	3,581	6,987	
Coconut Oil	...	...	...gals.	33,750	56,668	
Margarine	...	...	...lb.	6,611	3,236	
Lard Substitute	...	...	...lb.	13,281	5,499	72,410
<i>Soaps Hard—Laundry</i>	...	...	...lb.	430,247	71,768	71,768
<i>Soap Stock</i>	...	...	...lb.	86,231	12,053	12,053
<i>Fresh Vegetables</i>	...	...	...lb.	423,272	86,323	86,323
<i>Fresh Fruit, other sorts</i>	...	...	...lb.	145,473	20,638	20,638
<i>Bananas</i>	...	...	...stems	1,659	5,403	5,403
<i>Peas and Beans</i>	...	...	...lb.	—	—	—
<i>Livestock and Hides</i>						
Livestock—Animals and Birds	...	...	...living	—	12,919	
Hides	...	...	...lb.	399	25	12,944
<i>Bitters</i>	...	...	...proof gals.	43,087	409,542	409,542
<i>Honey</i>	...	...	...lb.	57,737	7,525	7,525
<i>Milk—Fresh</i>	...	...	...gals.	1,878	2,428	2,428
<i>Wine</i>						
In bottle	...	...	...Liq. gal.	3,067	7,185	
In wood	...	...	...Liq. gal.	597	699	7,884
<i>Jam, Marmalade and Fruit Jellies</i>	...	...	...lb.	254,873	36,504	36,504
<i>Spices</i>						
Ginger	...	...	...lb.	35	9	
Nutmegs	...	...	...lb.	26,525	10,076	
Mace	...	...	...lb.	1,290	1,118	
Other sorts	...	...	...lb.	1,000	571	11,774
<i>Syrup</i>	...	...	...lb.	13,258	2,999	2,999
<i>Coir Fibre</i>	...	...	...lb.	124,100	6,579	6,579
<i>Paper Making Materials</i>	...	...	...lb.	—	—	—

Total Value of Exports ...\$26,806,254

Sugar

23. The sugar output for 1948 was 115,941 tons as compared with 110,068 tons in 1947. The increase was smaller than had been estimated and may have been partly due to strikes during the reaping season on some of the estates. The Hindustan Factory did not operate and the farmers' canes were directed to the Craignish Factory in accordance with the Production of Cane Ordinance, No. 61 of 1946.

24. Estate canes amounting to 752,666 tons and farmers' canes amounting to 403,711 tons were ground during the season. Quality of the juice was fair at first and improved later on, the average outturn for the season being comparatively high at 9.97 tons of cane per ton of sugar. The average *estate* yield of cane was 26.23 tons per acre as compared with 24.80 tons per acre in 1947 and 23.28 tons in 1946. Comparative figures for acre yield of farmers' canes are not available but it is known that they are lower than those of *estate*.

25. Of the 115,941 tons of sugar produced some 20,000 tons were allocated for local consumption and the balance was purchased by and exported under the direction of the Ministry of Food to the United Kingdom and to Canada.

26. *Price of Farmers' Canes.*—The price of farmers' canes was declared at \$7.25 per ton compared with the 1947 price of \$6.52 per ton.

27. *Labour.*—Apart from the strikes already referred to which occurred on two large estates during the earlier part of the reaping season, the labour situation was otherwise normal. These strikes delayed reaping of estates' canes and depressed the sugar output below a fair estimate of over 125,000 tons.

28. *Froghopper Control.*—Froghopper damage was not pronounced during the year. In addition to the standard methods of control, one estate experimented with the various insecticides, employing a helicopter fitted with the dusting equipment.

29. *Soulbury Commission.*—A Commission under the chairmanship of Lord Soulbury was appointed by His Excellency the Governor to enquire into the Sugar Industry of the Colony with the following terms of reference :—

“To enquire and report on the organisation of the sugar industry, with particular reference to the means of production, wages structure and working conditions, and to make recommendations”.

This Commission met in Trinidad in August and September and continued their enquiry in the United Kingdom.

Cocoa

30. Exports of raw cocoa during the calendar year amounted to 18,285,605 lb. as compared with 9,009,644 lb. in 1947 and 6,626,962 lb. in 1946. Due to heavy and continuous rains during the second half of the year the setting of young fruit appeared backward in the wetter districts and it is anticipated that the output for the crop period October 1948-September 1949 will be affected adversely.

31. The high prices paid on the market for cocoa have been an incentive to salvage and cultivate formerly abandoned plantations. The Rehabilitation Scheme has also received an impetus and is progressing favourably as proprietors become better acquainted with the nature and performance of the heavy bearing cocoa clones.

32. Prices paid directly to the producer increased during the year from \$41.00 per fanega of 110 lb. to \$44.00. The effect of prices on the economy of the industry, and on the Colony, is reflected from the following figures :—

<i>Year</i>	<i>lb. exported</i>	<i>Value in \$</i>
1938	42,436,447	2,369,285
1945	7,731,824	1,080,047
1946	6,626,962	1,171,781
1947	9,009,644	3,205,049
1948	18,285,605	8,353,312

Coconuts

33. Adverse effects of the 1947 drought were reflected in the poor crop of coconuts and low production of copra during 1948.

34. Weather conditions, however, favoured recovery and trees appeared to have regained their health by the end of the year. It is anticipated that cropping in 1949 will be normal.

35. Exports of copra products were again, under the terms of the Oils and Fats Conference held in Barbados, limited to the Caribbean Area. Production was hardly sufficient to meet local needs and exports were comparatively small, amounting to \$72,210 only as compared with \$1,277,306 in 1947.

36. Again no copra was exported as such, but the entire production was utilised by the local factories for oil extraction and processing. Products manufactured included the following :—

Edible oil produced	...	1,392,034 gallons
Lard compound	...	749,819 lb.
Margarine	...	214,258 lb.
Butter substitute	...	239,678 lb.
Laundry soap	...	8,077,933 lb.

The price of copra to the producer remained at 7 cents per lb. and 27,646,080 lb. of copra were processed by the principal factories.

Citrus

37. This industry is rapidly becoming of major importance to the Colony. New areas are constantly coming into production and expansion is receiving an impetus from the Cocoa Subsidy Scheme whereby lands under cocoa which are considered unsuitable for cocoa rehabilitation, may receive assistance for conversion to other crops and a considerable acreage is being planted to citrus under this scheme.

38. Exports of all citrus and citrus products during 1948 amounted to \$2,170,450 as compared with \$1,058,324 in 1947.

39. The Co-operative Citrus Growers' Association canned 274,120 cases of juice in 1948 as compared with 175,535 cases in 1947. Of this amount 28,695 cases were consumed locally while 219,585 cases were exported. They also packed 234,855 crates of fresh fruit for export in 1948 as compared with 97,192 crates in 1947.

40. An agreement with the Ministry of Food to supply the United Kingdom with concentrated orange juice has been negotiated and preparations are now being made for the provision of the necessary equipment, &c.

41. While the grapefruit and orange cultivations make good progress it is a matter of regret that the lime industry continues to decline due chiefly to premature dying out of trees in various parts of the Colony. The cause of this condition of the lime trees remained undiagnosed.

42. Weather conditions also had an adverse effect on setting of fruit in grapefruit and oranges and the 1949 production is likely to be poor.

Other Crops

43. *Coffee*.—The coffee crop was poor and barely sufficient to meet local requirements but towards the end of the year there were indications of a fair crop for 1949. Exports accordingly were at the low level of 1,450 lb. raw coffee and 45,256 lb. prepared coffee as compared with 1,265,675 lb. raw coffee and 49,435 lb. prepared coffee exported in 1947.

44. *Tonca Beans*.—The exports of tonca beans amounted to 105,959 lb. valued at \$93,335 as compared with 1947 exports of 204,176 lb. valued at \$196,515.

45. *Rubber*.—The agreement whereby all rubber produced was made available to the Government of the United States of America through the agency of Rubber Development Corporation was discontinued in 1947. As a consequence, the prices offered for rubber on the open market were far below the cost of production in Trinidad and only 7,728 lb. sheet rubber were exported realising \$2,318 as against 324,899 lb. valued at \$221,296 exported during the previous year.

46. *Fresh Vegetables*.—There were small exports of fresh vegetables amounting to 423,272 lb. valued at \$86,323.

SECTION II

WORK OF THE DEPARTMENT OF AGRICULTURE

47. The work of the Department has continued to progress and curtailment of the various activities, normally resulting from acute shortage of trained staff, has been kept to an absolute minimum.

48. As in previous years, this Section of the Report will give a summary of the achievements and activities of the various divisions of the Department of Agriculture. Fuller details are available in the unpublished reports of individual officers and enquiries regarding any particular aspect of the work will be welcomed.

District Work

49. The Extension Services remain the most important Division of the Department and form the very necessary contact with the primary producer. They are responsible for disseminating the knowledge gained on our Research and Experimental Stations and they also bring to light the problems and difficulties facing the primary producer.

50. The work of the Division has included the regular preparation of crop reports, a continuance of the detailed crop survey of the Colony and supervision of the field work entailed under the Cocoa Subsidy Scheme. Other activities have included the following.

51. *School Gardens*.—Monthly marking of school gardens in connection with the competition for the Shield awarded by the Agricultural Society of Trinidad and Tobago proved to be a valuable innovation resulting in a sustained effort towards good gardening. Some 230 schools entered for this competition and the Shield was won by Curepe C.M. School.

52. *Food Allotments*.—The agricultural standards on many of the Crown Land food allotments leave much to be desired and much progress is still required to replace crop exploitation by good farming practices. On the more fertile areas and where there is a demand for permanent gardens, improvements, such as the provision of access roads and bridges, are being made and plots and boundaries are being adjusted to conform with approved lay-outs.

53. *District Stations*.—Good progress has been made with the Demonstration Stations at Rio Claro, El Reposo (Sangre Grande), Penal and Louis d'Or, Tobago.

54. *At Rio Claro*, the model farm buildings have been completed and the station carried its full complement of livestock which includes a dairy of three cows, pigs, poultry, goats, rabbits and even bees. In the small dairy, milk records are kept and the principles of clean milk production are demonstrated. In conjunction with this station, a breeding unit is maintained for the improvement of livestock in the area.

55. The farm land is divided into a 10 acre holding, a 20 acre holding and the balance of some 30 acres is available for experiments in connection with cocoa rehabilitation.

56. The 10 acre holding includes a demonstration of the shade and windbreaks required for the establishment of a 4-acre block of clonal cocoa. Various clones are being tested, including those resistant to Witchbroom, and at 2½ years old, some of the trees are already bearing pods. The balance of the 10 acre holding is laid out in half acre plots for the raising of arable crops including corn, yams, adlay, fodder grasses, &c.

57. In the 20 acre block, ground shade is being established for museum blocks of the various cocoa clones and the arable section, which is upon undulating land, is being planned to demonstrate the principles of soil conservation and good land usage.

58. *The El Reposo Demonstration Station* is planned on the same lines as those at Rio Claro and, as at Rio Claro, the Station is proving of great value as a centre for extension work.

59. At the small station at Penal, in the Oropouche Lagoon Area, the building programme is almost complete and work on the improvement of paddy, the production of vegetables in the dry season and the use of livestock continues. The station also houses a breeding unit for the improvement of livestock in the area.

60. *At Louis d'Or, Tobago*, a station similar to those at Rio Claro and El Reposo is being established to form the extension centre for the Windward Districts of Tobago. During the year, the old estate buildings were renovated and office accommodation, a cocoa house, stockman's quarters and stable accommodation provided. Fodder fields have been established and livestock have been brought on to the station. Work on the model 10-acre holding will commence in 1949.

Marketing, Co-operation and Fisheries Division

61. *Produce—Market Conditions.*—Considerable improvement over conditions in 1947 was noted. Although there was the usual glut of provisions in the early months of the year, supplies were more evenly distributed. Even during the months of July and August there was hardly any shortage of ground provisions. Tannias, which are usually very seasonal, were obtainable throughout the year in satisfactory quantities and in the latter months were so plentiful as to occasion a glut.

62. The general supply of green vegetables was extremely good, especially during the period January to June. During this period it was possible to export a considerable quantity of cabbages, and tomatoes to Barbados and British Guiana. After June, supplies were reduced and market prices rose until November when the new crop came on the market.

63. Both the main crop and the second crop of corn were poor and the stocks purchased by the Division in 1947 were utilised in easing the market. Green pigeon peas were very plentiful up to March, from then onwards supplies declined and the market was bare by the end of April. Black Eye peas were scarce and did not appear freely on the market throughout the year.

64. *Marketing.*—Divisional activities were confined to the purchase and disposal of the crops scheduled under Government's guarantee to producers. Items handled comprised bananas, plantains, tannias, yams, sweet potatoes and corn. Most of this produce came from the Counties of St. Andrew and St. David and the Island of Tobago. A market was found for a large quantity of Tobago pigeon peas and farine.

65. Purchases in 1948 totalled 1,889,668 lb. of which corn represented 404,000 lb. The comparable figures for 1947 were purchases of 4,033,580 lb. of which corn represented 3,077,400 lb. The activities of the Division acted as a stabilising factor in prices to the producer, and it is in this respect that its greatest contribution is made to the encouragement of production.

66. *Produce from Tobago.*—Records of shipment of produce from Tobago to Trinidad, kept by the Division showed a welcome increase and revealed that 3,327,282 lb. produce were received as compared with 1,650,455 lb. for 1947. In addition, approximately 181,000 lb. dry pigeon peas and 120,000 lb. corn were shipped.

67. *Stockfeed*.—The division continued to manufacture balanced stockfeed utilising, wherever possible, locally produced ingredients. Dairy feed totalling 406 tons was distributed to livestock owners and poultry keepers were provided with 82 tons of emergency poultry ration and 262 tons of scratch grain. In addition to these quantities, departmental stations were supplied with 676 tons of feeding stuffs.

68. *Fish*.—The fishing season proper opened on 1st May at Matelot. The Toco Fisherman's Association found difficulty in disposing of purchases from its members and the Division was asked for assistance in marketing. Arrangements were made to handle their fish in July, and subsequently, in August, the service was extended to include the Co-operative Associations which had been formed at Sans Souci and Grande Riviere.

69. The season was not a very good one, yet purchases of 190,451 lb. of fish were handled from the four points before-mentioned as compared with 167,821 lb. from Matelot alone during the previous fishing season.

70. *Shark Liver Oil*.—No further work was undertaken on oil extraction from livers but arrangements were made to purchase oil from fishermen. 26 gallons were purchased but as the oil was not up to standard purchasing was temporarily discontinued.

71. *Seeds and Planting Material*.—A quantity of local planting material comprising yam seed, gros michel and mysore bananas and plantain suckers, as well as pigeon peas and corn grown on Departmental Stations, was disposed of. These items and imported seeds accounted for sales of \$16,894.87.

72. *Cartridges*.—Improved supplies in the hands of merchants obviated the need of wide scale distribution by the Division and sales were confined to one day per week at various country Police Stations.

73. *Fertilizers*.—Stocks of fertilizers were carried at most Marketing Depots and they met a favourable response from producers, sales amounting to \$1,011.02 compared with \$38.35 in 1947.

Co-operation

74. Work in connection with Agricultural Credit Societies and registered Agricultural Co-operative Societies now forms the subject of a separate Annual Report and will be found under a separate cover.

Fisheries

75. *Staff*.—With the Assistant Fishery Officer resigning in January, the Fishery Assistant Grade II transferring to the Harbour Master's Department and the Fishery Assistant Grade I resigning in April, staff difficulties militated against any marked progress. The Division was without staff until July when an Assistant Fishery Officer was appointed and in August, an appointment was made to the post of Fishery Assistant Grade I.

76. The work of the new staff was largely confined to visiting the various fishing beaches and becoming acquainted with the fishermen and their problems.

77. The Acting Marketing and Co-operative Officer made a preliminary investigation into conditions in the Cedros-Icacos area about which complaints had been received and a survey was undertaken into the needs of fishermen for out-board motors.

78. *Fishermen's Co-operatives*.—The Division assisted in the organisation of Fishing Co-operatives at Grande Riviere and Sans Souci. Marketing Division equipment was loaned to Sans Souci and Grande Riviere fishermen were accommodated at the Marketing Depot. A suggestion was made to the Matelot group that they ought to impose a cess of 1 cent per lb. on their members' fish to raise capital for taking over and operating the Depot in 1949. The suggestion was favourably received and at their request Marketing staff were instructed to collect the cess which realised \$616.00. This amount was handed over to the Association in December when the Depot was closed. Assistance and advice were given a group at Cumana in formation of a Co-operative Association for handling fish in 1949, and assistance was promised them in loaning them equipment and arranging for the purchase of their fish.

St. Augustine Station

79. The sale of economic plants, vegetable seedlings and ornamentals from the Station showed a further increase and resulted in a record revenue of \$46,830.16. Mr. R. Ross, the Manager, summarises the more important aspects of the year's operations as follows :—

80. *Citrus*.—Owing to the extremely dry 1947 rainy season and the following dry season of 1948 production of citrus plants for 1948 amounted to only 58,767. However, with the inclusion of standovers from 1947, it was possible to effect distribution of some 74,838 budded plants.

81. Booking of applications for the 1949 distribution closed on 30th November when 140,000 plants had been applied for. Over 170,000 sour orange stocks in addition to 1,100 Rangpur and 4,000 Sweet Seville (for special orders) have been transplanted to take care of these orders.

82. It has been observed that sun-hemp planted between the rows of stocks appears to exert a beneficial effect on the stocks by reducing scab infection—possibly by means of the partial shade afforded the stocks. All stocks have been manured with organic and inorganic manures and it has been possible to commence budding in November for 1949 distribution.

83. *Avocados*.—A total of 8,327 avocado plants were distributed in 1948 from the 1947 buddings—some 2,000 more than in 1947.

84. Included in this total are 77 plants issued free to Government Institutions, &c. In addition it has been possible to distribute some 300 plants from the current year's buddings. Orders for over 6,000 plants have been received for 1949 distribution and there should be no difficulty in meeting this demand.

85. *Mangoes*.—Distribution of mango plants is still far short of demand. A total of 3,065 plants were distributed including 62 on free issue. Old trees have been heavily pruned to promote new growth. Stocks are in good shape and every means is being adopted to step up production.

86. *Rubber*.—Clones of the high yielding varieties and of the leaf blight resistant strains have been maintained. Budding of seedlings with material from the 'high yielding' panel clones have been performed with a view of supplying the plot at Brooklyn, as budding *in situ* at Brooklyn has not been successful.

87. *Vegetable—Seedlings and Ornamental Plants*.—Production of vegetable seedlings was some 7,000 boxes ; of these 4,881 were sold, 82 distributed on free issue and the rest used in experiments conducted by the Economic Botanist and in maintaining the vegetable garden at this Station.

88. There was an increased demand for annual flowering plants in boxes. Of 657 produced 498 were sold and 28 distributed on free issue.

89. Sales of flowering trees, shrubs and hedging plants amounted to 40,691. Free issues totalled 5,662 plants.

90. *Minor Fruit Trees*.—Stock plants of a good variety of Guava from Mrs. P. Centeno, San Fernando, have been planted out. This Guava is of large size and makes an excellent fruit for dessert or preserve.

91. Mangosteen cuttings in the propagators have started rooting after a period of five months.

92. *Orchard Crops*.—Routine cultural operations were carried out. With the drawing to a close of various long-term experiments, all grapefruit and orange trees were given a dressing of 6 lb. sulphate of ammonia and 1 lb. of 'Sul-Po-Mag' per tree.

93. Production of fruit included 5,755 field crates of grapefruit, 120 field crates of oranges and 30,210 sour orange fruit delivered to the Co-operative Citrus Growers' Association and the sale locally of some 87,000 fresh fruit.

94. Plants of West Indian Lime budded on to sour orange, rough lemon, Rangpur and West Indian Lime were prepared for the Central Experiment Station.

95. *Field Crops*.—Nineteen varieties of the Barbados 1944 series of sugar cane were transferred to the Central Experiment Station for bulking of plant material prior to distribution to the Sugar Estates. During the year, 33 varieties of the 1945 series and 32 varieties of the 1946 series were received from Barbados.

96. The various pulses, pigeon pea, cowpeas, wooly pyrol and soya bean were again cultivated for the production of selected seed. Maize and Lisbon Yams were also grown for this purpose, the bulk of the seed being distributed through the Marketing Division of the Department.

97. A small plot of approximately 1/9th acre planted in the Marglobe and Ponderosa varieties of Tomato yielded 1,200 lb. of marketable fruit. At 12 cents per lb., this gave a net profit at the rate of \$756.00 per acre.

Government Stock Farm—Trinidad

98. *Staff*.—Mr. A. P. McWilliam, Agricultural Officer, continued as Manager of the Farm throughout the year. Mr. P. Dominique, the Supervisor, had long vacation leave in the United Kingdom and resumed duties at the end of the year. Mr. A. E. Joseph, Costings Officer, was promoted to the Land Settlement Division of the Department during the year.

99. The Farm lost the services of two other members of the Staff—Mr. Ramjohn—Stock Foreman—retired in September after forty years service and Mr. G. Pooran, Field Foreman, died early in the year after thirty-five years service.

100. *General*.—The Farm Buildings and the Stockman's quarters were renovated by the Department of Works and Hydraulics and a new water main and two fire hydrants were installed during the year.

101. Concrete culverts have been put down to replace temporary bamboo bridges on the main traces of the Farm and a trace on the southern boundary of the Farm linking up the new 40 acre block with the Farm proper has been widened and gravelled.

102. *Horsekind*.—The fees for thoroughbred stallions were maintained at \$40.00 for thoroughbred and \$30.00 for half-bred mares and there were satisfactory bookings for the two stallions "Portora" and the "Brown Bomber" (first season) who had 47 mares bred to them during the year. An average of 12 mares was stabled at the Farm daily during the breeding season.

103. The thoroughbred stallion "Curragh Kid", suffering from canker, had failed to respond to treatment and was destroyed.

104. Jack Donkey Stallions remained at stud but the demand for their services has fallen off.

105. *Cattle*.—With the Sahiwal cattle transferred to Tobago, work in Trinidad has been concentrated on maintaining grade Holstein Friesians with 75 per cent. Bos Taurus and 25 per cent. Bos indicus blood.

106. All calves are weighed at birth and regularly thereafter, and rigid selection of both bulls and heifers, based on hardiness and milk yield of the parents, is enforced before they are admitted to the herd.

107. Fifty-one heifers calved during the year of which forty-one were under 3½ years. Three produced 600 gallons, ten 500 gallons and twelve 400 gallons.

108. The incidence of tuberculosis on the Farm dropped from 15.24 per cent. in the first test to 5.4 per cent. in the first retest and is now at a level under 2 per cent.—1.8 per cent. Unfortunately some of the heifers mentioned in the previous paragraph succumbed to the test.

109. Tests with a Gammexane dispersible powder (Benzene hexachloride), soluble in water, tried as a spray on cattle to control ticks and flies, gave satisfactory results.

110. Cattle strength at 31st December was :—

Friesian Holsteins	...	...	...	...	3
Zebu	...	...	...	...	20
Grade Friesian Holsteins	...	...	...	...	308
Murrah Water Buffaloes	...	...	...	...	15
Oxen	...	...	...	...	3
					349

111. *Pigs.*—The pigs at the Farm were tuberculin tested for the first time. There were ten reactors in 77 tested. The reactors were chiefly among the large black breed and included 6 sows. The number of young pigs available for distribution was reduced to 66.

The strength of the piggery at 31st December was :—

<i>Large Blacks</i> :—	Boars	...	...	...	17
	Sows and gilts	...	...	...	20
<i>Berkshires</i> :—	Boars	...	...	...	16
	Sows and gilts	...	...	...	8
					61

112. *Goats.*—The new system of housing continues to give satisfactory results and the animals have kept in better condition.

113. The goats were also tuberculin tested and incidence dropped from 7.7 per cent. in the first test to 3 per cent. in the first retest.

114. Sales of young stock during the year totalled 12 and the strength of stock at 31st December was 72.

115. Thanks are due to Mr. A. J. Wharton, a well-known breeder, who presented Government with a buckling sired by the Goat Society's imported Sanaan Buck, "Hakon of Weald", out of one of his heavy milkers.

116.—*Poultry.*—Eleven new poultry runs and houses were erected in order that the young stock for the 1948-49 season could be reared on completely fresh ground.

117. Owing to a heavy moult, the breeding pens were made up a little later than usual in October. Thirty-five cocks were handed over to the Land Settlement Division in exchange for common roosters, four hundred and fifty-two chicks were sold and 12,217 eggs laid during the year.

118. The incidence of Avian tuberculosis was low and in the one single test carried out only 1.5 per cent. reacted.

119. The strength of the poultry at the end of the year was as follows :—

Cocks	...	...	...	...	43
Hens	...	...	...	...	109
Chicks	...	...	...	...	652
Ducks	...	...	...	...	24
					828

120. *Rabbits.*—Some of the young pure-bred Flemish Giant Rabbits were transferred to the Tobago Farm and have done well but at the Trinidad Farm work was concentrated on grading up as the pure-bred stock did not thrive as well as was expected.

121. *Cultivation and Pastures.*—The following acres were maintained under pasturage, food and fodder crops during the year :—

Pasturage	...	...	...	...	150 acres
Fodder	...	...	...	...	125 "
Food Crops	...	...	...	...	35 "
Coconuts	...	...	...	...	30 "
Total	...	...	...	...	340 acres

122. The tractor and accessory equipment were brought into use more fully during the year and nearly all the mowing of pastures was carried out mechanically and as a result they were kept in better condition. Thirty acres were ploughed for the planting of food crops and twenty for growing fodder.

123. The following are the number of recorded services at the Farm and at Stud Units in the outlying districts of the Colony during the year :—

Thoroughbred Stallions to mares	...	...	...	...	...	49
Jack Donkey	"	"	"	...	...	28
"	"	"	"	jennies	...	50
Bulls	...	...	...	...	...	1,181
Buck Goats	...	...	...	...	...	673
Boars	...	...	...	...	...	244

Tobago Stock Farm

124. *Staff.*—Dr. J. L. Shannon, D.V.M., Veterinary Officer (retired), was re-engaged in August for a further period of twelve months and was in charge of this Farm throughout the year.

125. The strength of livestock on the Farm on the 31st December was as follows :—

Horsekind including two thoroughbred stallions and seven jack donkey stallions	...	...	...	...	49
Cattle including a herd of 41 pure-bred Sahiwal	...	...	...	...	78
Pure-bred Murrah water buffaloes	...	...	...	...	5
Sheep (West African and Black Head Persian)	...	...	...	...	55
Goats (Anglo Nubians, British Alpine and Jumnapari)	...	...	...	...	46
Pigs (Large Black and Berkshires)	...	...	...	...	70
Poultry (Rhode Island Reds, Barred Plymouth Rocks, White Leghorns)	...	...	...	...	306
Rabbits (Flemish Giants)	...	...	...	...	20

126. Complete breeding units were maintained at the Farm and at two district stations at Mount St. George and Louis d'Or in the Windward district during the year. Pure-bred Sahiwal bulls also stood for service at Richmond, Friendship, Bon Accord, Grafton and New Grange Estates.

127. The following are the number of recorded services at the Farm and of Stud Units on District Stations during the year :—

Thoroughbred Stallions to Mares	...	...	...	...	46
Jack Donkey	"	"	"	...	36
"	"	"	"	Jennies	116
Bulls	...	...	...	...	134
Boars	...	...	...	...	128
Rams (Sheep)	...	...	...	...	74
Goats	...	...	...	...	190

The above excludes the services of the Sahiwal bulls on Richmond, Friendship, Bon Accord, Grafton and New Grange Estates and the Sahiwal bulls standing for service at the public pasture on the Farm.

128. The Farm staged an exhibit of all classes of livestock at the Annual Agricultural and Industrial Exhibition of the Tobago District Agricultural Society in December and afterwards conducted a sale of surplus stock from the Farm comprising all types of livestock. The sale realised the sum of \$2,750.00.

129. *Cultivation*.—The irrigated plot of $7\frac{1}{2}$ acres has been fully planted up in Guatemala, Uganda and Para grass and yielded abundantly throughout the year. Seed from Tropical Kudzu (*Pueraria javanica*), rabbit vine (*Teramus uncinatus*) and pig vine (*Ipomoea pterodes*) was broadcast through the cultivated fodder fields and has added palatability and increased the protein content, especially in the Guatemala fields.

130. The campaign against barrack weed (*Cassia tira*) has been maintained on the Farm during the year and four pastures, which have been stumped and treated with Sulphate of Ammonia and Superphosphate, have provided increased pasturage for the stock. Two more pastures, comprising 50 acres, have still to be stumped and treated with artificial manures.

131. The complete equipment for the milk processing plant for this Farm was received in Tobago at the end of the year and steps will be taken for the erection of the plant early in January, 1949.

Land Settlement Division

132. The work of this Division continued under the guidance of the Land Settlement Committee which held three meetings during the year.

133. Total expenditure under Other Charges was \$162,047.09 made up as follows :—

Development	...	...	...	...	...\$101,375.76
Maintenance	...	...	...	...	... 54,671.33
Extension Electricity to Maracas Settlement	...	...	...	...	... 6,000.00

134. Development work was carried out on two new areas, at Rio Claro and at the Bamboo Grove bordering the Churchill-Roosevelt Highway, and on established settlements at Alandale, La Tosca, La Reconnaissance, Maracas Valley, Munroe Road and San Francisco. Roads are the most expensive item in the development of Settlements as the following break down of expenditure shows :—

Road Construction	...	...	...	...	...\$ 87,759.99
Water Supplies	...	...	...	...	... 18,930.40
Extension of Electricity	...	...	...	...	... 3,343.84
Preparation of Lumber	...	...	...	...	... 1,341.53
					...\$101,375.76

135. Under Maintenance, the most expensive items were Upkeep of Roads at \$10,044.99, Repairs to Settlement Houses at La Pastora and Brooklyn at \$12,274.81 and Transport at \$10,082.15.

136. There are twenty-five areas scheduled as leasehold settlements where the holdings are rented in the first instance on a monthly tenancy and then, on the fulfilment of certain conditions are available for long-term leases of 25 years with options of renewal. The total acreage of these settlements already laid out into holdings, is 2,576 acres comprising 1,692 allotments. At 31st December, 1948, the position with regard to these holdings was as follows :—

Number of lots reserved (Schools, Churches, &c.)	...	...	...	...	69
Number of lots rented	...	...	...	...	908
Number of lots leased	...	...	...	...	331
Number of lots available for settlement	...	...	...	...	384
					1,692

137. *Housing*.—The settlement houses totalling 181 at La Pastora and Brooklyn were kept in repair and a further 9 timber cottages of the type mentioned in the 1947 Report were erected at the Maracas Valley Settlement. The erection of housing by settlers themselves was again on a very satisfactory level, 179 houses being built during the year.

138. *Revenue*.—Rents collected during the year totalled \$13,892.79 with arrears at December 31st totalling \$5,461.57. Other revenue, derived chiefly from the sale of agricultural produce from those settlements on which development is not yet complete, totalled \$29,380.64.

139. No new areas were acquired during the year but plans for future settlement work, dependent upon the availability of funds, include the development and lay-out of the Louis d'Or Estate in Tobago, extension to the Bamboo Grove Settlement and to the St. Helena Settlement at Matelot and the conversion of the El Recuerdo Food Allotments at Manzanilla into a Leasehold Settlement.

EXPERIMENT WORK AND SPECIALIST DIVISION

140. The Chief Scientific Officer, Dr. E. Phillis, reports on the work of the Central Experiment Station and summarises the work of the Specialist Officers as follows :—

141. *Staff.*—The staff shortage of previous years was accentuated during 1948 and due to vacancies, leave, absence and sickness, for most of the year, the Specialist Staff consisted of the Economic Botanist and the Chief Scientific Officer. Temporary relief was afforded by the secondment of the Entomologist, Food Crop Pests Investigation, Windward and Leeward Islands, for a period of three months, to assist in froghopper investigations. Two Soil Survey Officers were appointed during the year and have carried on with the soil survey initiated by the Soil Chemist who is absent on secondment in England. Considerable help has also been given by Dr. F. J. Simmonds, an Entomologist of the Commonwealth Bureau of Biological Control, who is at present stationed in Trinidad.

Central Experiment Station

142. The development of the Central Station is still delayed. Accommodation for senior and junior staff is an urgent necessity, so that there can be adequate supervision of work done and adequate records kept of results obtained. In the absence of any accommodation for stock or stock attendants, no progress can as yet be made on mixed farming problems.

143. Equipment is slowly coming to hand and it is now possible to attempt some cultivation work. The nucleus for an efficient staff for mechanical agriculture has been selected and trained and at present preliminary cultivation work is proceeding apace. Much experience has been gained in the use of equipment on these Central Plain clays and in the difficulties and problems which arise while working and growing crops on them.

144. The apparent infertility of the land appears to be due largely to compaction and to surface effects caused by standing water. When dry the soil has some degree of structure, but when thoroughly wetted it loses this completely, and disintegrates into a flowing paste which effectively seals the surface so that water lodges readily on every slight hollow on the surface. Any slight depression where small streams of water collect soon becomes an infertile spot where even established crops become stagnant. These soils cannot be worked when moist or wet since they quickly puddle ; they can only be worked when they are sufficiently dry to shatter. This characteristic imposes great limitations on arable farming and attempts are being made through cultivation and through the incorporation of organic matter to improve their water stability so that it will be possible to do some cultivation, if only to remedy bad spots, while crops are growing in the wet season.

145. Trials of pasture and fodder plants have continued. Perennial stands of such grasses as Guatemala and Elephant grass have been disappointing in that ratoon cuttings have never approached the first cut. It may well be that the land will require continuous cultivation, at least for the start, and that the grasses are not behaving as soil rejuvenators in the way we had hoped.

146. A grass of considerable promise has been found in *Ischaemum aristatum*, a native of tropical Asia. This grass has been in Trinidad for a number of years and is said to have grown where a packing case of equipment from the East had been unpacked, but no trials have hitherto been carried out with it and its existence was known only to very few people. It grows well, both in the dry season and in the wet, and flourishes on lands where other short grasses have difficulty in maintaining a hold.

147. Other work on the Central Station is described under the Crop headings.

Cocoa

148. Cocoa problems can be divided into three main classes. The first is the selection and testing of new varieties, both of normal types and of the special witches' broom resistant types. In this class can also be included the propagation of selected types. The second group concerns diseases and here the most formidable are the virus diseases. The third group of problems deal with the practical aspects of growing and preparing cocoa. It is abundantly clear that much of the information we should like on all these problems is not yet to hand, and staff shortages do not help in the matter.

149. *Sampling for Quality*.—One of the big obstacles in the way of all selection work is the difficulty in preparing small quantities of cocoa in such a manner that the qualities characteristic of large scale preparation can be developed. A normal 'sweat box' will hold approximately a ton of wet beans, representing may be 10,000 pods. What is wanted is some system whereby pods from a single seedling may be satisfactorily tested. Some preliminary work has been carried out on the essential nature of fermentation with a view to devising a small scale procedure based on sound principles. The results so far obtained indicate that the process takes place in two stages, one of which takes place at a low temperature and may even take place in the ripening pod, while the second phase is aerobic and develops high temperature (50-55°C). Trinidad cocoa enjoys normally a considerable premium as a quality cocoa over bulk cocoas such as the Gold Coast crop and it is essential for the existence of the industry here that the price differential be maintained. The crop produced by one of the new clonal cocoas (I.C.S.—1) is only now beginning to attain a sufficient size for bulk fermentation to be carried out and this is the first clonal cocoa to be so tested.

150. *Clonal Propagation*.—The propagation of cocoa by cuttings is proceeding apace and in 1948 about a quarter of a million plants were produced. Various difficulties in the process, such as the maintenance of the nursery plants at such a size that they produce vigorous free-rooting cuttings, are being surmounted. At the same time new techniques for rooting are being tried, in an effort to reduce cost. General interest in the Scheme for Cocoa Rehabilitation is quickening as the earlier plantings come into bearing and show what excellent crops they can produce.

151. *Cocoa Virus*.—A clear idea has been obtained of the distribution of virus in the Colony. Beyond an escape traceable to infected planting material obtained from within the virus area some years ago and which is being eradicated, the disease is restricted to the North-western corner of the Island and rigorous steps are being taken to stop spread beyond the area. Precautions include the proposed establishment of a cocoa free belt around this area. The two strains of virus existing here are both mild in their effects when compared with "Swollen shoot" but there is little doubt that they do have a deleterious effect on both growth and yield of the diseased plants.

152. *Agronomy*.—The low average yield of the average cocoa plantation here is a matter of grave concern. It is quite clear that under average estate conditions, trees are not given the opportunity to develop their full genetic bearing capacity. This has been put down to 'senescence' but it would appear to be a senescent environment rather than a senescent tree. Attempts on the Central Experiment Station 'to bring back' old cocoa have so far failed to give any appreciable improvement.

Sugar-Cane

153. It is pleasant to record that this crop makes good and increasing use of the results of research. There is a definite feeling among the sugar community that this is a period of resurgence after wartime difficulties and that agronomic improvements in many directions are taking place. Over 95 per cent. of the canes planted on estates in Trinidad have been bred in recent years at the West Indies Cane Breeding Station in Barbados. At present, the variety B. 34104 predominates, as it accounts for approximately 55 per cent. of the total acreage.

154. There is an increasing use of fertilisers, particularly of potash and phosphate, and increased attention is being paid to cultivation. In the hilly area, contour cultivation is being more widely adopted. Side by side with the interest in cultivation is an interest in mechanisation. New ideas in machines are on trial and it is very obvious that robustness is necessary to stand up to modern dry-season-cultivation conditions.

155. *Froghopper*.—There is continued interest in pest control. During the year there has been intensive work on froghopper control. One company carried on with its system of dusting with DDT from blowers drawn by tractors along the traces. Another company with large fields experimented with dusts and sprays applied by helicopter. It was established that helicopter dusting against the adult froghopper is uneconomical, for the area which a helicopter can cover, as well as the short time for which protection is assured by dusting with DDT or Gammexane would necessitate a large fleet of helicopters standing by in readiness for an out-break. During the year it was found that the material used in diluting insecticides for use as a dust has an important result on the effectiveness of the dust.

156. The long term residual action of DDT noted in previous years has not been confirmed and would appear to have been a spurious effect caused by a naturally declining population. Comparative tests with adequate controls have shown that both DDT and Benzene hexachloride can both bring about a practically complete and instantaneous knockdown, but that the population begins to increase again within a few hours and is back to normal within a few (5) days.

157. Certain estates have drawn attention to the marked lethal effect of B.H.C. on mymphs. A further interesting phenomenon is the lasting potency of B.H.C. in soil, in contra-distinction to its ephemeral effect as an aerial dust. It is safe to say that froghopper is no longer the most important factor in cane cultivation. The question no longer is "Can it be controlled?", but "What is the cheapest and most effective method of control?".

158. *Cane Borer*.—During the year the Department enlisted the aid of the Commonwealth Bureau of Biological Control in an investigation on the effects of anti-froghopper dusts on cane borers and their parasites. Recent American work had indicated that borer parasites might be preferentially destroyed, leading to an increase in the borer population. Counts made on dusted and undusted fields and also in time before and after dusting showed that this did not happen in practice.

159. Increased borer populations in certain areas were found to be associated with a particular system of agriculture a particular variety of cane and a particular species of *Diatraea*. Generally, the *Diatraea* population consists of the species *Impersonatella* and *Canella*, the latter usually preponderating, and only an insignificant proportion of *D. saccharalis*. Where the cane variety B. 37161 is grown, there may be a marked increase in *D. saccharalis*, the proportions of the other two species as well as their density remaining approximately constant. Where long-cane planting of B. 37161 is practised, there was a very great increase in the density of *D. saccharalis*. It is believed that the combination of a susceptible variety and of a system of planting which does not permit infected planting material to be detected and rejected has, over a period of three or four years, permitted the *D. saccharalis* population to build up to a high level.

160. Even at this high level, when approximately half a million eggs were being laid per acre per week, the degree of parasitism by *Trichogramma* remained remarkably high (*circa* 99 per cent.). Other parasites have been introduced into these heavily infected areas; these include *Lixophaga diatraeae* and *Metagonistylum minense*. This investigation is continuing, and has been extended to include the large Moth Borer, *Castnia licoides*.

161. *Manuring*.—Some twenty years ago the Estates turned from pen manure to fertilisers, mainly nitrogen. A review of the response to ammonium sulphate indicates no falling off during this period. Evidence is accumulating, however, that added response can be expected in certain areas from phosphate and from potash. Attention is also being directed to the effects of fertilisers on juice quality as well as on gross cane growth.

Citrus

162. There is little to report on citrus. Generally speaking the Island's crop was excellent and remarkably free from any pests and diseases. Scab was reported from one or two areas but, in the absence of suitable equipment, no control was possible on a field scale. It is hoped that the new low volume sprays will be of use, for most citrus plantations are not well supplied with water at the time spraying against scab is desirable. The very good prices realised for citrus have stimulated

new planting but parasol ants take an appreciable toll of these plants. A cheap and safe deterrent against these (and other) ants would be a great boon. At the present the only method of control is to locate and destroy the nest and while this is always possible in theory, it is often difficult in practice because of the distances these ants may travel.

163. *Minor Elements*.—An experiment on the effects of the minor elements Zinc and Manganese on grapefruit is giving interesting results. A field was chosen in which the trees showed many deficiency symptoms, including dieback. Most of the trouble disappeared when ammonium sulphate was given and crop increased appreciably. There still remained various leaf deficiency symptoms and some dieback. Zinc and Manganese removed the leaf symptoms, and Zinc stopped the dieback, but neither of these elements had any appreciable effect on crop. Magnesium sulphate actually caused a marked reduction in crop when added along with ammonium sulphate and it is difficult to say whether the improvement in the appearance of the trees to which magnesium was added was due to a real improvement brought about by the magnesium, or to the lighter crop carried.

164. *Dying out of Limes*.—Limes continue to die out. Manures and minor elements may give temporary improvement, but actually appear in some cases to hasten dying out. Land on which citrus has been growing for some time appears particularly liable to dying out—a field has been located where seedlings die within a few months. Experiments are in progress in which seedlings from such an area, in which dying out has already commenced, are being transplanted to fresh soil.

Coconuts

165. A start has been made on the Central Station with the establishment of a block of palms produced from nuts from heavy bearing parents. Selected Ceylon nuts have also been included in this block.

166. *Manuring*.—The fertiliser trials on estates have been dominated by the after effects of the 1947 drought. In the Cedros experiment, all treatments suffered a marked reduction in crop and none of them had any effect in warding off the effects of drought. On an East coast estate, where the effects of the drought were less marked, nitrogen has had a beneficial effect. An interesting feature is that the response of the poor bearers has been very much greater than those which normally bear good crops.

Rice

167. A survey of local practices in rice planting was carried out by the District Services and with this as a basis an experimental programme covering two or three years has been planned.

168. The survey indicates that almost all 'cultivation' work is done by hand. Only in the North is ploughing by animal draught used. Consequently, there is a decided tendency to wait until the land is softened by rain before any cultivation is begun. On the other hand, the work carried out in 1947, and repeated in 1948 shows that the varieties in general use here are markedly photoperiodic, and that the yield is directly proportional to the length of the growing season. Thus rice planted with the first rain in June heads at much the same time as rice planted in August, but the June planted crop far exceeds the August one. The local tendency of late planting caused by delayed land preparation is to some extent compensated by transplanting from nurseries.

169. *Methods of Planting*.—An experiment in which three methods of establishing the crop—broadcasting, drilling and transplanting—were compared indicated that just as high yields can be obtained by broadcasting as by the far more expensive transplanting. There was no difference in the yield obtained from the three treatments, but the broadcast rice 'lodged' far more than either of the other two treatments.

170. The local practice in planting is to put several seedlings per hole at close spacing. Experimental work indicates that this effort to obtain a good stand is not justified, for two or three seedlings at 12" spacings gave optimum yields. Tillering was found to be inversely proportioned to the area available per seedling and the high rate of tillering at wide spacing compensated for the larger number of seedlings at closer spacing.

171. *Double cropping*.—With early planting, main crop paddy yields in the region of 4,000 lb. per acre have now been obtained for several seasons. Experiments with second crops have not been nearly so successful, and it is becoming clear that the underlying reason is the photoperiodic nature of all the local varieties so far tested. Much of the rice is grown in heavy clays, and even with irrigation, these are not suited for vegetable production in the dry season. (The humic lagoon soils and the sandy rice lands are very suitable for the purpose). If these irrigated clay lands are to be used successfully for growing two rice crops per annum, then new non-photoperiodic strains will have to be developed.

172. *Variety Trials*.—Variety trials in which some of the standard local varieties were compared with imported strains indicated the latter were generally better than the former. This was not unexpected, for the imported strains were all pure selections, whereas the local strains were unimproved and unselected. There should be considerable hopes for selections within the local strains.

173. *Hill Rice*.—Strains of hill rice are being developed which have actually given yields at least equal to the Island's average paddy production. These strains do well on wet ill-drained clays and do not require flooding. On such soils where annual crops such as corn suffer badly from water-logging, hill rice should be a far more suitable crop, provided that it gets good attention in its early weak stages. In the coming season an attempt is to be made to mechanise the production of hill paddy.

Vegetables and Root Crops

174. The technique of vegetable growing in the Colony is steadily improving and there is now an all the year round supply (which, however, is only adequate in the dry season months). Newer varieties and better cultivation knowledge as well as the profit incentives are the reasons for this improvement.

175. *Tomatoes*.—Tomatoes still present a problem in the wet season. Several varieties can give good yields of high quality fruit in the dry season, but all fail miserably in the wet. It was at first believed that this was due to the high incidence of disease, but even plants grown in green-houses, where good control of pests and diseases could be obtained, failed to bear. It now seems probable that the wet temperature here is too high in general. One variety 'Wonder of Italy' sets fruit freely in the rains, but it is a non-commercial type, and so it has been crossed with better commercial types in the hope that a good wet-season fruiting strain may be developed. Some progress has already been made in this direction.

176. *Yams and Sweet Potatoes*.—Experiments are still in progress on the mechanisation of yam and sweet potato growing. Most, if not all the heavy work of earth moving in making ridges and later splitting these can be done by power drawn implements (either machine or animal). The crops can be ploughed out with very little damage. There are slight indications that the size of the yams produced can be controlled through the size of the banks used. If this can be confirmed, it should be a very useful piece of information, for it is the yam of 2-5 lb. rather than the big one of 10-20 lb. which is commercially desirable.

New Varieties of Plants

177. During the year many varieties of plants, particularly oilseeds, have been under test. These include Sunflower, Castor bean, Sesame, Soya bean, Oil palms. All the imported varieties of annuals showed marked segregation here, and in all cases, the best plants showed great promise. Selection work is in progress to fix these desirable strains.

Veterinary

178. *Staff*.—Dr. A. V. Hall, D.V.M. (Guelph) joined the Department on 1st July on transfer from the Leeward Islands (St. Kitts), Dr. S. Bennett, D.V.M. (Colorado) was appointed Veterinary Officer (part time), Southern Division on 1st October on his return to the Colony and Dr. J. L. Shannon, D.V.M. (Iowa)—retired—was re-employed in August for another period of twelve months.

179. *Proclaimed Diseases*.—There were no outbreaks of proclaimed diseases during the year but the following suspected outbreaks were investigated and proved to be negative :—

(a) Anthrax	...County of St. George	...	...	...1 case
(b) Paralytic Rabies	...,, ,, St. Patrick	...	...	...2 cases
	...,, ,, St. Andrew	...	...	...2 ,,
	...,, ,, St. George	...	...	...2 ,,
(c) Swine Fever	...,, ,, Victoria	...	...	...3 ,,
	...,, ,, Caroni	...	...	...2 ,,

180. *Anthrax*.—Owing to outbreaks of Anthrax in the Islands of Nevis and Montserrat (Leeward Islands), the importation of animals and their products from these Islands into this Colony was prohibited during the first quarter of the year but restrictions were removed towards the end of the year when no further cases occurred in that Colony.

181. *Swine Fever*.—There were again no outbreaks of Swine Fever during 1948 and the Colony has now been free from this disease for two years. Vaccination with Crystal Violet Vaccine has been carried out regularly on all young pigs at the Stock Farms at weaning age and during the year 364 privately owned pigs were similarly treated.

182. *Tuberculosis*.—During the year 1,228 bovines were tested, including the animals on the Government Farm, and there were 75 reactors or approximately 6 per cent.

183. With the use of the tuberculin prepared by the Ministry of Agriculture and Fisheries of the United Kingdom—purified protein derivative—in which the allergic power is greater than in the material previously used, there has been an increase in the number of reactors and although as reported last year, it was thought that we were dealing with non-specific tuberculosis, some of the systemic lymphatic glands however did show haemorrhagic infiltration and an oedematous condition. Due also to the low incidence of poultry and skin tuberculosis as well as Johne's disease, especially on the Stock Farm any reactor has been treated as a case of bovine tuberculosis and the use of the comparative test (avian and mammalian) has been discontinued.

184. There has been a high incidence of tuberculosis among the water buffaloes on the Sugar Plantations (35 per cent.) and in all cases reactors have been segregated. This has been followed up by a slaughter policy in some cases. The high incidence may be largely attributable to the methods of management on the Estates and advice as to better stabling and feeding arrangements has been given.

185. *Non-Proclaimed Diseases*.—There were four cases of Distemper at the Dogs' Quarantine Station during the year traced to the introduction of a dog (Hound) from the United States of America in the infective stage. Arrangements have now been made to isolate all newly introduced dogs for three weeks in isolated kennels.

186. An outbreak of Canine Piroplasmiasis (malignant jaundice) occurred in dogs imported into the Colony from Canada and five of the animals died whilst in quarantine.

187. *Internal and External Parasites*.—These have been responsible for a great deal of debility and in some cases mortality especially among young bovine stock. Regular dosing with Phenothiazine and also Copper Sulphate is recommended by the Department for internal parasites. A solution of Sodium Arsenite is chiefly used to control external parasites (ticks) but in some cases Gammexane and DDT have been used and success reported though it would appear that the initial kill with DDT is low but its residual effect is more lasting.

188. *Brucellosis in Cattle* (Contagious Abortion).—The incidence of Brucellosis during 1948 was again negligible. At one dairy, Trichomoniasis has been suspected but the condition has not been confirmed.

Bee-keeping

189. *Registered Apiaries*.—The number of apiaries on the Register at the end of the year was 232 comprising 3,238 bee colonies.

190. The bulk of the honey produced is sold on the local market and prices have reached \$8.00 per 4-gallon tin of 56 lb. 57,737 lb. of honey valued at \$7,525 were exported during the year.

191. The Inspector of Apiaries has maintained five demonstration apiaries on the Department's Stations and has given frequent lectures to District Agricultural Societies, Teachers' Training Courses, &c.

192. There were no cases of disease during the year but during the rainy season some small damage was caused by the Wax Moth (*Galleria mellonella*) and where it occurred, infected material was collected and destroyed.

BOARDS AND COMMITTEES

193. The Director of Agriculture continued his Chairmanship of the Board and Committees listed in the 1947 Report and in addition, he was during the year appointed Chairman of the Cocoa Board and of the three committees set up under the Sugar Industry (Special Funds) Ordinance.

STAFF NOTES

194. Mr. J. C. Muir, Director, who had been on vacation leave, was transferred to Tanganyika Territory as Director and Mr. E. W. Leach, Deputy Director (Crop Husbandry) was appointed Director of Agriculture as from 4th March.

195. Dr. F. J. Pound, Senior Agricultural Officer, was appointed Deputy Director (Crop Husbandry) on 4th March. (Dr. Pound resigned his appointment on 31st December, 1948, in order to take up a post as Director of an agricultural development scheme under the Liberia Company. It was with great regret that the news was received of his death in a launch accident, in February, 1949, only a few weeks after his arrival in Liberia).

196. The following appointments were made during the year :—

Soil Survey Officers on the 19th February and 5th July by the appointment of Mr. G. C. Witt and Mr. D. H. Constable respectively.

Veterinary Officers on the 15th June and 1st October by the appointment of Dr. A. V. Hall and Dr. S. Bennett respectively, the latter appointment being on a part-time basis.

Entomologist on the 24th June by the appointment of Mr. R. G. Fennah.

197. At the end of the year, the following senior vacancies existed :—

Senior Agricultural Officer	Marketing and Co-operative Officer
Sugar Agronomist	Plant Pathologist
Agricultural Officer (2)	Veterinary Officer

198. Mr. E. W. Leach, Director, proceeded to the United Kingdom on vacation leave in July and Capt. H. V. M. Metivier, Deputy Director (Animal Husbandry) was appointed to act as Director from then until the end of the year. Other acting appointments during the year included Dr. T. A. des Iles, Veterinary Officer, as Deputy Director (Animal Husbandry) and Mr. E. G. Benson, Agricultural Officer, as Senior Agricultural Officer.

199. Dr. E. M. Chenery, Soil Chemist, was seconded for service at the Rothamsted Station, United Kingdom, from 14th June, 1948, for an expected period of two years.

E. W. LEACH
Director of Agriculture

DEPARTMENT OF AGRICULTURE, TRINIDAD AND TOBAGO

SCIENTIFIC AND TECHNICAL STAFF

(As at 30th October, 1949)

<i>Director of Agriculture :</i>	E. W. LEACH, B.Sc., A.I.C.T.A.
<i>Deputy Director (Crop Husbandry) :</i>	C. HOLMAN B. WILLIAMS, M.A., A.I.C.T.A., D.I.C.T.A.
<i>Deputy Director (Animal Husbandry) :</i>	H. V. METIVIER, O.B.E., M.R.C.V.S., B.Sc.
<i>Chief Scientific Officer :</i>	VACANT
<i>Agronomists :</i>	B. G. MONTSERIN, Ph.D., M.Sc., B.S.A.
	M. N. LUCIE-SMITH, M.A., B.Sc., D.I.C.T.A., Dip. Agric. (WYE).
	VACANT
<i>Economic Botanist :</i>	D. B. MURRAY, B.Sc., B.A., A.I.C.T.A.
<i>Entomologist :</i>	R. G. FENNAH, M.A., A.I.C.T.A.
<i>Plant Pathologist :</i>	VACANT
<i>Soil Chemist :</i>	E. M. CHENERY, Ph.D. (Seconded to Rothamsted)
<i>Soil Survey Officers :</i>	G. C. WITT, B.Sc., A.R.C.S.
	D. H. CONSTABLE, M.Sc., A.R.C.S., D.I.C. (Seconded as Chief Cocoa Rehabilitation Officer)
<i>Veterinary Officers :</i>	T. A. DES ILES, D.V.M. B.V.Sc., Dip. Agric.
	A. V. HALL, D.V.M., D.V.P.H.
	S. BENNETT, D.V.M., B.V.Sc. (Part-time)
	J. L. SHANNON, D.V.M. (Temporary)
<i>Inspector of Apiaries :</i>	E. A. EMOND
<i>Senior Agricultural Officer :</i>	VACANT
<i>Agricultural Officers :</i>	E. G. BENSON, B.Sc., A.I.C.T.A.
	F. D. DAVIES
	G. P. BLAIR, B.Sc., D.I.C.T.A.
	J. F. BELL, B.Sc.
	R. B. SMITH, B.Sc.
	VACANT
<i>Superintendent, Public Gardens, Grounds and Pastures :</i>	I. HOSEIN, B.Sc., D.I.C.T.A.
<i>Senior Agricultural Assistants :</i>	T. BOODANSINGH
	R. LEACOCK
	S. HAGLEY
	D. M. FARRELL
	V.I. MULLOON, D.I.C.T.A.
	R. MOOSAI-MAHARAJ, D.I.C.T.A.
	VACANT
<i>Agricultural Assistants :</i>	H. H. BEACH, D.I.C.T.A.
	F. A. FARRELL
	W. O. BISHOP, D.I.C.T.A.
	I. TELFER, D.I.C.T.A.
	R. GREAVES
	S. BHARATH
	VACANT (3)
<i>Land Settlement Supervisor :</i>	P. O. M. HOSTEN
<i>Senior Agricultural Assistant :</i>	A. E. JOSEPH
<i>Agricultural Assistants :</i>	C. E. FORDE
	W. McMILLAN
<i>Manager, St. Augustine Station :</i>	R. ROSS
<i>Marketing and Co-operative Officer :</i>	VACANT
<i>Agricultural Assistant :</i>	L. C. FARRELL
<i>Agricultural Assistant (Government Farm) :</i>	F. O. GONZALEZ, B.Sc., D.I.C.T.A. (On study leave)
<i>Manager, Tobago Farm :</i>	VACANT
<i>Supervisor, Government Farm :</i>	P. DOMINIQUE
<i>Stock Inspectors :</i>	J. MELFORD
	A. XAVIER
	L. PREUDHOMME
	D. MacFARLANE
<i>Assistant Fishery Officer :</i>	CAPT. R. E. HUNTE
<i>In addition there are :</i>	9 FIELD ASSISTANTS GRADE I
	63 FIELD ASSISTANTS GRADE II
	2 SENIOR LABORATORY AND FIELD ASSISTANTS
	3 SCIENTIFIC ASSISTANTS
	2 JUNIOR SCIENTIFIC ASSISTANTS

SECTION III

PUBLICATIONS

A few Practical Suggestions on Poultry Keeping in Trinidad and Tobago—By DR. J. L. SHANNON, D.V.M., Veterinary Officer—Proceedings Agricultural Society, March, 1948, pp. 46-57.

Mixed Farming in Tobago—By DR. J. L. SHANNON, D.V.M., Veterinary Officer—Proceedings Agricultural Society, March, 1948, pp. 67-73.

Poultry Diseases—By DR. J. L. SHANNON, D.V.M., Veterinary Officer—Proceedings Agricultural Society, June, 1948, pp. 121-134.

Goat Husbandry—By E. G. BENSON, Acting Senior Agricultural Officer—Proceedings Agricultural Society, June, 1948, pp. 135-141.

Honey as a Food—By E. A. EMOND, Inspector of Apiaries—Departmental.

SECTION IV

LEGISLATION

	Date	References	Remarks
AGRICULTURE			
Gazette Notice No. 63 of 1948. Section 36 of Interpretation Ordinance, Ch. 1. No. 2	5/ 1/48	Interpretation Ordinance Ch. 1 No. 2	Former title of Citrus Agronomist changed to Agronomist
Gazette Notice No. 69 of 1948. Distribution of Pool—Cocoa Crop 1946-1947	5/ 1/48	Distribution of Pool	Cocoa producers and dealers to submit sale slips not later than 28th February, 1948
Gazette Notice No. 28 of 1948. Cane Production Ordinance, 1946 Section 9 (1) (a)	6/ 1/48	Interim Price of Farmers' Canes 1948	Rate of interim payments to farmers fixed at \$6.00 per ton
Government Notice No. 30—Sugar Quotas Order, 1948	3/ 2/48	Sugar Quotas Ordinance, Ch. 23 No. 13	Allocation of local quotas for 1st February, 1948 to 31st January, 1949
Gazette Notice No. 405. Section 4 of Cocoa Industry Ordinance, Ch. 23 No. 22	16/ 3/48	Appointment of Chairman Cocoa Board	Director of Agriculture appointed Chairman Cocoa Board
No. 7 of 1948. Ordinance to provide for the establishment of a Marketing Board	23/ 4/48	Marketing Board Ordinance, 1948	Establishing of Marketing Board
No. 12 of 1948. Sugar Industry Special Funds Ordinance, 1948	21/ 5/48	Sugar Industry Special Funds Ordinance, 1948	Establishment of special funds by the Accountant General
Gazette Notice No. 1002 of 1948 ...	1/ 7/48	Commission of Enquiry in the Sugar Industry	Three additional members added to the Commission
Government Notice No. 135. Additional variations to the Scheme submitted in Council Paper No. 61 of 1948	3/ 8/48	Cocoa Rehabilitation Scheme	Additional variations to Cocoa Rehabilitation Scheme
Gazette Notice No. 1250 of 1948. Commission appointed to enquire into Sugar Industry of the Colony	16/ 8/48	Commission of enquiry Ordinance, Ch. 7 No. 2	Lord Soulbury appointed Chairman of the Commissioners
Gazette Notice No. 1276 of 1948 ...	17/ 8/48	Cess on Cocoa. Cocoa Industry Ordinance, Ch. 23 No. 22	Cess of \$2.00 per 100 lb. to be paid from 20th August, 1948
Gazette Notice No. 1597 of 1948 ...	15/10/48	Price of Farmers' Canes, 1948 ...	Farmers' Canes priced at \$7.25 per ton
No. 27 of 1948. Cocoa Industry (Amendment) Ordinance, Ch. 23 No. 22	29/10/48	Cocoa Industry (Amendment) Ordinance, 1948	Sub-section (6) of section 17, Cocoa Industry Ordinance amended
No. 20 of 1948. Ordinance to amend the Agricultural Credit Societies Ordinance, Ch. 23 No. 4	29/10/48	Agricultural Credit Societies (Amendment) Ordinance, 1948	Sub-section (2) of Section 3 amended Section 7 amended
Gazette Notice No. 1778 of 1948. Agricultural Credit Bank Ordinance, 1945	17/11/48	Agricultural Credit Bank Ordinance No. 14 of 1945	Mr. H. O. B. Wooding, K.C., appointed member of the Board of Management
Gazette Notice No. 2018 of 1948 ...	28/12/48	Cess on Cocoa. Cocoa Industry Ordinance, Ch. 23 No. 22	Cess on cocoa to be \$2.00 per 100 lb. from 31st December, 1948
VETERINARY			
Gazette Notice No. 26 of 1948 ...	3/ 1/48	Stud Animals	Charges for Government stud animals in Trinidad and Tobago—Gazette Notice No. 1580 of 22nd September, 1947 cancelled
Government Notice No. 60. Diseases of Animals Ordinance, 1948	16/ 3/48	Diseases of Animals Ordinance, Section 13 Ch. 25	Importation of animals from Presidency of Nevis prohibited
No. 13 of 1948. An Ordinance to amend the Diseases of Animals Ordinance Ch. 25 No. 2	21/ 5/48	Diseases of Animals (Amendment) Ordinance, 1948	Amendment of Section 2 of Ch. 25
Government Notice No. 101 of 1948. Slaughtering of Livestock (Amendment) Order 1948	26/ 5/48	Slaughtering of Livestock (No. 2) Order 1942	Words "Director of Agriculture" substituted for the words "Food Controller"
Government Notice No. 158. Importation of Animals (Foot and Mouth Disease) Regulations, 1948	14/ 9/48	Diseases of Animals Ordinance, Ch. 25 No. 2	Importation of Animals (Foot and Mouth Disease) Regulations of 1946 revoked

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